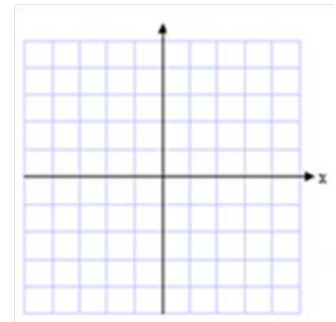
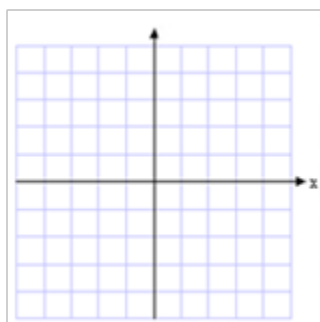
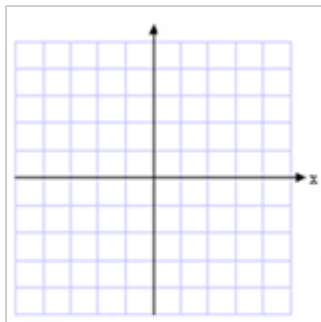
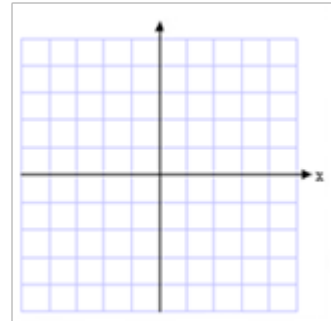
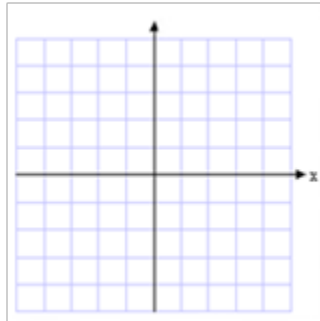
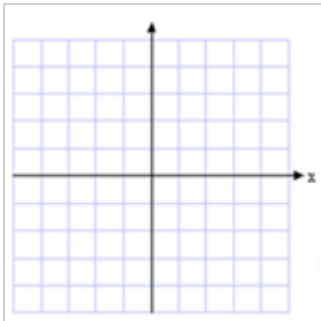


5.3 In-class Practice

- Given the polynomial function $P(x) = 3x^2 - 2x + 5$, evaluate $P(4)$, $P(-2)$, and $P(0)$.
- Let $f(x) = x^2 - 4$, $g(x) = 1 - 2x$, and $h(x) = x + 2$. Find each of the following.

a) $(f + g)(x)$	b) $(f - h)(x)$	c) $(h - g)(x)$	d) $(f + g)(a)$
e) $(f + g)(2)$	f) $(f - h)(-2)$	g) $(h - g)\left(\frac{1}{3}\right)$	h) $(f + h)(0)$
i) $(f \circ g)(x)$	j) $(f \circ h)(x)$	k) $(g \circ f)(x)$	l) $(g \circ g)(x)$
m) $(f \circ g)(2)$	n) $(f \circ h)(0)$	o) $(g \circ f)(0)$	p) $(f \circ f)(-1)$
- The function defined by $f(x) = 12x$ computes the number of inches in x feet, and the function defined by $g(x) = 5280x$ computes the number of feet in x miles. What is $(f \circ g)(x)$ and what does it compute?
- Assume that you work forty hours a week at a furniture store. You receive a \$220 weekly salary, plus a 3% commission on sales over \$5000. Assume that you sell enough this week to get the commission.
 - Explain the meaning of the functions $f(x) = 0.03x$ and $g(x) = x - 5000$ in the above context.
 - Which of $(f \circ g)(x)$ and $(g \circ f)(x)$ represents your commission?
- Graph each function. Give the **domain** and **range**.

a) $f(x) = -\frac{2}{3}x + 2$	b) $g(x) = -x^2 + 2$	c) $h(x) = (x + 2)^2$
d) $p(x) = 2 - x^3$	e) $q(x) = (x - 2)^3$	f) $r(x) = 2x^2$



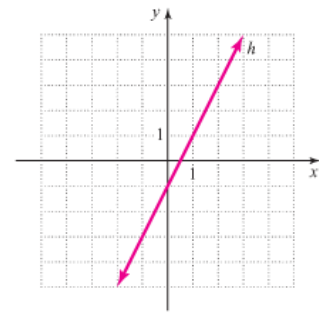
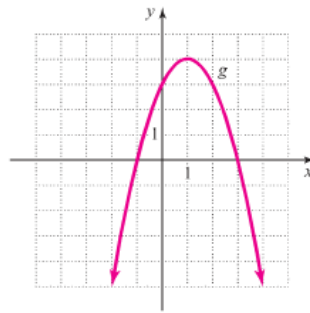
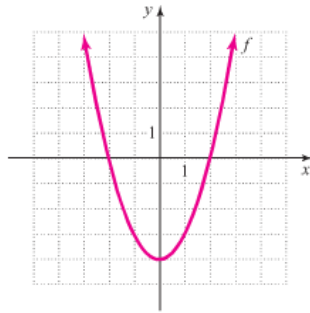
Investigation

3. Consider the graphs of the functions $f(x) = x^2 - 4$, $g(x) = -x^2 + 2x + 3$, and $h(x) = 2x - 1$ shown here.

$$f(x) = x^2 - 4$$

$$g(x) = -x^2 + 2x + 3$$

$$h(x) = 2x - 1$$



a. Use the graphs to complete the table.

x	-2	-1	0	1	2
$f(x)$					
$g(x)$					
$h(x)$					

b. Use the table in part (a) to complete the following table:

x	-2	-1	0	1	2
$f(x) + g(x)$					

c. Compare the values of $f(x) + g(x)$ to the values of $h(x)$ for a given value of x . What do you notice?

d. What conclusion can you draw about the relationship between $f(x)$, $g(x)$, and $h(x)$? Confirm your answer algebraically.